

Docket No. 64875

## EYEGLASS DEVICE

## FIELD OF THE INVENTION

The present invention relates to an eyeglass device comprising auxiliary eyeglasses, which are attached to primary eyeglasses by magnetic or mechanical engagement.

## BACKGROUND OF THE INVENTION

With eyeglass clips which are attached by means of conventional attachments, the clips may become disengaged by torsion. As the frame is twisted or turned in any axial, radial or other direction, the clips will become dislodged from the primary frame, thus falling off or, at a minimum, becoming out of alignment and perhaps partially disconnected from the primary frame. To address this problem the rigidity of the primary frame must therefore be balanced, so as not to deform too much when subjected to various types of torsion. This has been true of

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primary frames used in association with both of magnetic and non-magnetic auxiliary frames.

Today, frames are commonly manufactured with more flexible materials.

Another alternative has been to have an auxiliary eyeglass frame made out of extremely flexible material. However, auxiliary frame of this type have the disadvantage of being very fragile.

Various types of auxiliary eyeglass frames which contain magnetic material to facilitate adhesion to the primary eyeglass frame have been disclosed in the prior art. U.S. Patent No. 4,070,103 discloses an eyeglass frame in which the peripheral edges of the primary frame and lens rim covers contain magnetic strips to hold the lens rim cover in place on the primary frame. U.S. Patent No. 5,416,537 discloses an eyeglass frame which contains magnetic members on the temple of the primary frame which engage a corresponding magnetic member on the temple of the auxiliary frame. U.S. Patent No. 5,642,177 discloses an auxiliary eyeglass frame which uses the same principle of magnets on the temporal portions as U.S. Patent No. 5,416,537; however the auxiliary frame disclosed in U.S. Patent No. 5,642,177 contains a hinge on the bridge of the frame which allows it to be folded. U.S. Patent No. 5,568,207 discloses an auxiliary frame which contains small extensions on the temporal portions of the frame which secure the auxiliary frame to the primary eyeglass frame in addition to using the principle of magnetic members as disclosed in U.S. Patent No. 5,416,537. U.S. Patent 6,012,811 discloses an auxiliary eyeglass frame in which the bridge includes a U-shaped structure having two arms on the top and bottom of the bridge, respectively, with magnets located in respective arms, and the bridge of the primary frame, including its magnetic member, is sandwiched between the two arms.

There are many disadvantages to the eyeglasses described above. The auxiliary eyeglass

frame described in U.S. Patent No. 4,070,103 requires magnetic strips on both the primary and auxiliary frames. The auxiliary eyeglass frame described in U.S. Patent No. 5,416,537 has the magnets attaching at the top of the primary frame, thus requiring the wearer to be extraordinarily precise in placing the auxiliary frame on the primary frame. The auxiliary eyeglass frame disclosed in U.S. Patent No. 5,642,177 has front mounted magnets, which may cause the auxiliary frame to separate from the primary frame if jostled by the wearer.

Canadian patent 2,235,798, Canadian application 2,258,142, and U.S. patent 5,894,335 provide other examples of mechanical and /or magnetic attachment of auxiliary and primary frames.

### **SUMMARY AND OBJECTS OF THE INVENTION**

The primary objective of this present invention is to provide an auxiliary eyeglass frame which securely attaches to a primary eyeglass frame by magnets.

This objective is achieved by a primary and auxiliary eyeglass frame combination comprised of a auxiliary eyeglass frame and a primary eyeglass frame, each containing separate lenses therein. The auxiliary eyeglass frame includes two side portions which are connected by a bridge. Each side portion of the frame has a temporal extension with magnets mounted, preferably, on a top of each extension. The primary eyeglass frame also includes two side portions which are connected by a bridge. The bridges of both the primary and auxiliary frames may be made of a flexible memory alloy, such as NiTi, or CuAlBe similar to that disclosed in U.S patent 5,640,217, so that the bridges are more deformable than other parts of the frames. Each side portion has a temporal extension to which temporal members, providing earpieces, are

connected. Each temporal extension also has a magnet mounted, preferably, on an underside of the extension. The auxiliary eyeglass frame is secured to the primary eyeglass frame by the magnetic force between the bottom mounted magnets on the primary frame's temporal extensions and the top mounted magnets on the auxiliary frame's temporal extensions. If the bridge of either the primary or auxiliary frame is made of a flexible shape memory alloy, such as NiTi or CuAlBe, it would be less likely that the auxiliary frame will become dislodged if jostled by the wearer because both frames would be able to withstand slight deformation. In other words, a relatively flexible portion linking two more rigid frame parts could deform to absorb an impact on one frame part, preventing the shock being transmitted to the other frame part.

According to another aspect of the invention, magnets may be mounted on one or both frames at any suitable location, such as on one or both bridges, for example, and one or more other, possibly adjacent, locations of one or both frames (where a magnet is not mounted, for example, the temporal extensions or temples), may be made of a flexible shape memory alloy or other suitable flexible material.

Magnetic engagement of primary and auxiliary frame parts may be obtained by provision of cooperating permanent magnets on both frame parts, or by a permanent magnet on only one frame part with a cooperating portion of the other frame part being made of magnetic material functioning as a temporary magnet.

The primary and auxiliary frames may rely for attachment together on magnetic engagement alone, or such magnetic engagement may be supplemented or replaced by mechanical engagement provided, for example, by suitably located clips, pins and sockets or other suitable releasable fastenings, as described in any of the references referred to above, the